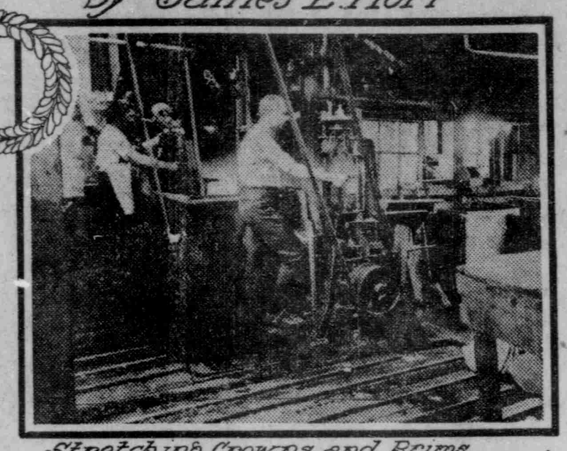
HOW YOUR HAT IS MADE

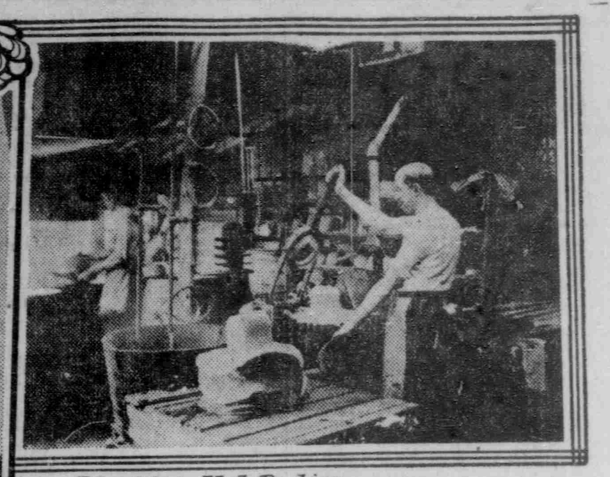
by James L. Hoff

Stiffening Hat Bodies with Shellac



Stretching Crowns and Brims

Cleaning and Blending Fur. Blowing and Mixing Machines



Blocking Hat Bodies

Shaping Hat Brims

INTERESTING among the strange traditions of trades is the origin of the fur hat commonly worn by men today. Several centuries ago a mendicant Friar made a pair of sandals from a hare's skin. At first he wore them with the fur side out for look's sake, but the rough skin hurt his feet and induced him to line his sandals with fur cut from other skins. After a long pilgrimage one hot day he removed his sandals and discovered that the fur lining had formed a firm fabric around his feet. Being a wise man he reasoned that the heat and moisture from his feet had caused this miracle, and after some experiments he was able to form a rude covering for his head by applying hot water to hare's fur. This was the beginning of the making of "felt," and St. Clement, for that was the Friar's name, is hailed today as the patron saint of the hatters.

Historians have their dates mixed on this question, but it is reasonably certain that hats were made of felted fur as early as the eighth century. The beginning of the hatmaking industry in America is also in doubt, but as far back as 1732 the London hatters complained that the colonists were making hats at a rate too great to suit them, which would indicate that the industry must have been brought over to the New World at an early date. Today there are more than 20,000 journeyman hatters in the United States who make something like 20,000,000 hats every year. The principal centers of this industry are Danbury, Ct.; New York city, Newark and the Oranges, N. J., and Philadelphia, with scattering factories at other points in the East. Danbury claims to be the greatest hat center. It has 30 factories, with a product of about 6,000,000 hats yearly.

Almost every man wears a fur hat. Very few have the faintest idea how hats are made, yet the process of manufacture is of the greatest interest in all its details. To begin with, the material used is the fur of the hare, the coney and the muskrat, obtained principally in Belgium, Germany, France, Russia, Scotland and Australia, so that the greater part of the raw material for hats made in America is imported and comes in the form of a "fleece" in bundles weighing 5 and 10 pounds each. Those benevolent persons who find fault with women for wearing the feathers and wings of birds in their hats should remember that every hat worn by men represents a life sacrificed by at least one soft-furred creature.

After the pelt has been removed from the animal the fur is carefully brushed and the long hair is plucked out, and a solution of nitric acid and mercury applied to develop the serrated edges of each fiber. As this solution gives the fur a yellow tinge, it is called "carrotting." The pelt is next cut away from the fur, leaving it in a "fleece," which is sorted for quality and packed in bundles for delivery to the hatmaker.

At the factory the process begins with the cleansing and blending of the fur, the forming and felting of the hat bodies; the stiffening, dyeing and blocking of the hats, and, finally, the finishing and trimming. All these processes are performed mainly by hand. What machinery is used requires skilful operatives, and fully 50 different persons handle a hat from the time the fur is weighed out for the "former" until the finished hat is ready to be shipped, each one performing some necessary duty requiring a certain degree of knowledge and skill.

Old Dame Nature seems to have specially designed the fibre of fur for felt. Shaping the felt into hats was left to the ingenuity of man. If placed under a microscope each fibre will be seen to have a row of barbs on either side. When hot water is applied to the fur it curls and matts and the little barbs hold the fibres tightly together. Repeated dipping in hot water and manipulation by hand cause the fibres to knit still more closely and thus the felt in formed.

The first thing the hatmaker does is to mix the long and short grades of fur together in proper quantities and to remove all impurities. The mixing is done by a machine called a "devil," through which the fur passes three times. Then it goes through the "blower" which completes the process and turns out a nice fluffy mass of fur ready for the "former." By long experience the hatter knows just how much fur is needed for the different sizes and styles of hats, so the fur is weighed out to the fraction of an ounce. For stiff, or "derby" hats the usual quantity is from 2½ to 3 ounces, but more recently a "web-weight" hat has been made that uses but 1 1-3 ounces of fur. Soft hats require from 3 to 8 ounces, according to the size of the crown and width of brim. The fur is carefully weighed and placed in a tin tray divided into 12 compartments, and passed to a girl who feeds each bunch into the "former."

Here is where Yankee ingenuity has effected a great saving of time and labor to the hatmaker. Prior to 1850 the fur was formed into hat bodies by the tedious process of "bowing," by which the workman snapped a handful of fur into the air with a bow-string when it would settle on the surface of a table within a circumscribed space. He then covered it with a cloth wet in hot water to make it "felt," after which he pulled and stretched it into shape by hand. The process was so slow that a man could make but six hat bodies per day.

The "forming" machine, which was invented about the date named, did away with the "bowing" operation and practically revolutionized the business, for it would do the work of nearly a hundred men toiling along in the old way.

In appearance the "former" is like a huge barrel set on end, underneath a hole in the bottom is set a rapidly revolving fan which creates a current of air downward. Over the hole is set a brass cone so closely perforated that it looks like a sieve. It is about three feet high and tapers from a diameter of two feet at the bottom to about six inches at the top. The fur fed into the former at the top through rapidly revolving brushes, is drawn quickly and evenly down upon the surface of the cone. An operator, standing in front of the machine, opens the doors with which it is fitted, wraps damp cloths about the fur covered cone, takes it out and gives it a bath in hot water. This process causes the fur to cling together, and after a moment's immersion it is removed from the bath and the beginning of the hat body slipped off.

The next process is called "sizing" and is performed by men working around large kettles filled with boiling water. The hat body as it comes from the "former" is taken by them, wrapped in a piece of burlap and repeatedly dipped in the hot water and rolled by hand till it shrinks down to the desired size and thickness. When finished the body is cone-shaped and about one-third as long as when it came off the forming cone. During this process the felt is carefully examined for imperfections that would result in spoiling the hat in the finishing process. "Sizing" is by no means a pleasant process. Clouds of steam rise from the kettles of hot water filling the room so that the workmen look like mere ghosts through the dense vapor, and water dripping from their benches covers the floor an inch deep.

Up to this point all hats look alike, regardless of future size or form—a grayish cone of felt, varying slightly in length and weight. Some factories carry the process no farther and are known as "body factories," and their product is sold to other factories where the finishing is done.

The first step in the finishing process is coloring. The hat bodies are thrown into large vats of dyestuff of the desired color, heated to the boiling point, where they remain for several hours until thoroughly impregnated with color, after which they are dried. "Stiffening" is the next process. With "derbys" both crown and brim must be stiff, but with "soft" hats the brim must be stiffened enough to preserve its shape. The bodies that are to be made into "stiff" hats are dipped in a solution of shellac dissolved in alcohol which is carefully worked in by hand. All the free shellac is scraped off and the body turned inside out so that the side to which the shellac has been applied will come on the inside and not interfere with the final finishing process. In the case of the soft hats only that part of the body which forms the brim is treated with the shellac solution, which is pressed in by a machine.

Drying kilns with a temperature of 170 degrees receive the stiffened hat bodies and extract all the moisture and alcohol. In this way fully 80 per cent. of the alcohol used in dissolving the shellac is recovered. But, as it contains a certain percentage of water, it goes to a rectifying plant and is redistilled under the watchful eye of Uncle Sam, who demands a revenue on the recovered product.

Now comes the real work of hat making. The stiffened cone shaped piece of felt resembles nothing in the line of a modern "Kelly," or top-piece, unless it be the peaked clown's hat sometimes seen in a circus ring. The crown must be blocked and the brim shaped and that soft, glossy finish developed on the outer surface. Softened by hot water the hat body is stretched in crown and brim by an ingenious machine and passed along to a workman who "blocks" it by stretching it onto a wooden block by hand, giving the crown a general shape and flattening out the brim. In this condition the hat has no particular form or style, but it looks like a hat. Exact shape is imparted to the crown by the next process, called "pressing." Having been dried after the blocking process the stiff hat form is heated in an oven to soften it and the crown placed in a steel die, which is made to conform exactly to the style in which the hat is to be finished. A rubber bag, through which cold water is pumped, is dropped down into the inside of the hat crown and the pressure turned on. This pressure varies from 400 to 600 pounds to the square inch and forces the felt to conform to the shape of the steel die. The cold water stiffens the felt and the crown comes from the press hard and firm. For soft hats the process differs here. Instead of being shaped by the hydraulic press the soft hat is steamed and stretched over a die of the required shape and ironed with hot irons to bring it to the proper shape, after which it is cooled by the water press.

Shaving and pouncing the crowns is the next process. The hat is put on a cylinder which revolves against a knife and the rough nap is shaved off. Then it is placed on a revolving wooden block and smoothed with pouncing paper—a sort of sandpaper—and "leured" to bring out the fine effects of the dyes. "Leuring" is done with a pad of coarse muslin, heated, with which grease is applied to the surface and thoroughly rubbed in. Soft hats are finished in the same manner. That finishes the work on the crown; the brim only remains to be shaped and curled.

A machine trims the brim to the desired width and an operator either by hand or machine, working with hot irons, gives the edge of the brim its curl. A matricing machine, which is a die in two parts, presses the brim into shape by hydraulic pressure of about 300 pounds. The brim cools in this die and comes out hardened into the fashionable curves. This completes the process of manufacture. The trimmings are put on by girls who bind the brim, attach the silk band and bow around the crown and the sweatband inside, pasting in the proper labels, after which the hat is passed along for final inspection and packing for shipment.

WHALEBONE IS VALUABLE.

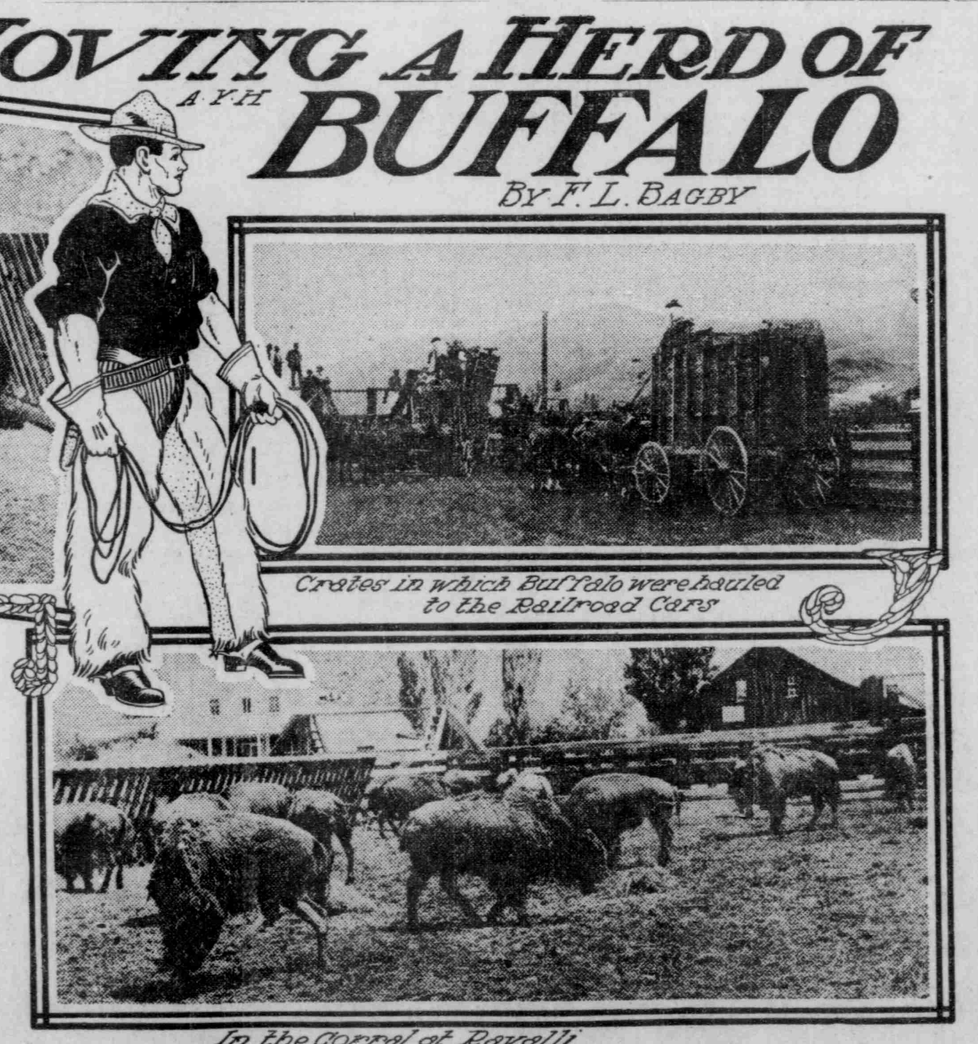
Whalebone, which used to cost 35 cents per pound 50 years ago, is now worth $5 for the same amount. A single whale may yield 3,000 pounds, and this makes it a very valuable article. The whales are getting very scarce in the Northern seas and they are not often killed.

MOVING A HERD OF BUFFALO

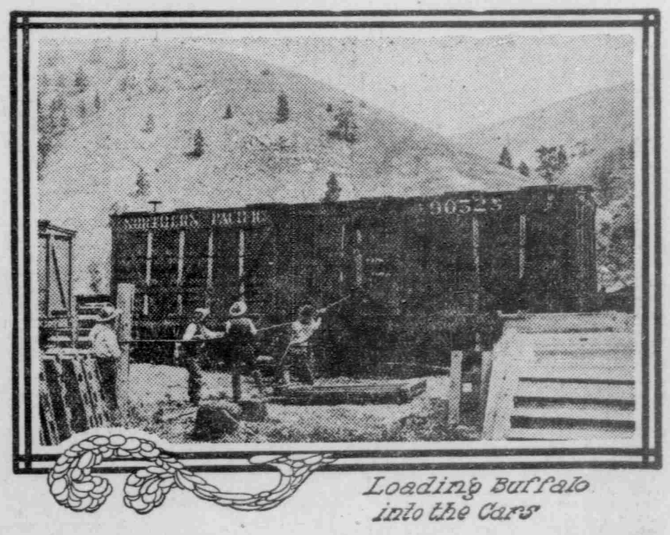
BY F. L. BAGBY

Monarch of the Herd

Crates in which Buffalo were hauled to the Railroad Cars



In the Corral at Ravalli



Loading Buffalo into the Cars

WITH the shipment recently of nearly 200 Buffalo from Ravalli, Mont., to Canada, all but the outlaw remnant of the largest herd of wild bison in the United States were removed from their native heath to the limited confines of a foreign park—to make way for the advancing march of progress and development. Trapped into man-made corrals, roped and loaded into cages, bound down with chains and wire, hauled over long and rough roads, then dragged by main force into freight cars and shipped so like many common cattle over the railroads, nearly 600 of these lords of the plains have been dragged from the free and untrammeled range of their nativity into a national playground, where they will be kept as noble specimens of American big game. And this is all done to make room for the white man—the man with the plow and the hoe, whose conquest of the soil has swept the red man, the buffalo and other wild game before him like mist before the wind. The settler, in the great battle of development, needed more lands to conquer. The Flathead reservation offered an enticing field for his activities. But there was not room for the red man's buffalo and the white man's cattle; perforce the bison had to make way for the munching cow, the toiling horse and the ravenous sheep and swine of him who was coming to transform the untamed wilds into an Arcadia of homes, farms and ranches. The grazing range of the buffalo was to become the feeding ground of domestic animals, so the bison were sold for a paltry sum and men were hired to capture and ship them into the country of the purchaser, the Canadian government. And when the 150 head that remain upon the reservation are rounded up and shipped this fall there will be none of the noble animals left to dispute the right of the white man's stock to every blade of grass on the range where once the monarch was lord of all he surveyed.

But a few years ago bison roamed the Western plains in countless numbers. Herds so large that days were required for them to pass a given point, frequently forced pioneer immigrants to encamp and wait patiently for them to pass before they could resume their journey over the new trail into the unknown wilderness of the vast West. But these days have swiftly glided into the past, and with them are vanishing the buffalo like a mirage at the setting of the sun. The thunderous pound of their hoofs is heard no more, and the plains where they once were wont to graze in peace or rush in maddened fright before some impending danger, are crossed with fences, dotted with farm houses and producing farm products to sustain life and pour dollars into the pockets of their conquerors—the white man.

Man's appetite for fresh meat and the discovery that buffalo tongue was a delicacy to tickle the palate of an epicure first led to the ruthless slaughter of the animals, the lives of countless thousands being sacrificed for the sake of their tongues. When the bison began to get scarce and wealth developed a hobby for buffalo hides and heads, man's greed for gold furnished a motive for the slaughter of more and more, until he suddenly awakened to the realization that the buffalo was almost extinct. A desire to save and protect these noble animals found birth in the hearts of a few men, and the surviving buffalo were gathered together in small herds by animal fanciers, zoological gardens and bison societies in various parts of the country. The Canadian government took an interest in the matter and established herds in some of its parks. The United States government has, at last, been interested and has established a bison range in Montana, but it failed to act in time to prevent the loss to this country of the largest herd within its borders.

Among the individuals who took an interest in preserving the buffalo was Charles Allard, who secured a few animals and started a park on the Flathead reservation, near Ronan, in the early eighties. He increased this herd by breeding and purchase to more than a hundred head in a few years. In 1893 he purchased the herd owned by "Buffalo Jones," of Kansas, and drove them across country to his herd on the Flathead. Accompanied by his family and riding in an old-fashioned barouche, he followed the herd across plain and mountain until the members of the band were safely delivered on the reservation in Montana. This herd consists of full-blooded and half-breed animals. The latter were products of cross-breeding with cattle, but they did not prove to be a desirable animal, having all the undesirable and none of the good qualities of either ancestor. The mongrels were separated from the blooded animals, and the latter were permitted to range in a wild state on the reservation. They thrived and the herd grew until it numbered almost 800.

When Allard died the herd passed into the possession of his partner, Michel Pablo, a half-breed Indian and an expert buffalo raiser. Pablo was induced to dispose of a few of the animals to zoological parks, but kept the larger portion of the herd intact until he learned that the reservation was to be thrown open to settlement and that the buffalo must make way for the settler and his cattle. Then it was that Howard Eaton, expert hunter, of Wolf, Wyo., attempted to interest the United States government in the purchase of the herd. Failing in this he turned to the American Bison Association, but again was unsuccessful.

It was at this juncture that the Canadian government sent Howard Douglas, superintendent of the Western Canada national parks, out to the Flathead to see the herd and make an offer for it. Mr. Douglas recommended the purchase of the animals and an offer of about $130,000 was made. This was accepted, Pablo agreeing to deliver the animals in Canada for that price.

Then came the task of rounding up these animals, transporting them from their range to Ravalli, Mont., 36 miles away, loading them upon freight cars and shipping them to Canada, where they had to be unloaded and delivered in the parks. To say that such a task was herculean is to express it mildly, but Michel Pablo was not daunted. He employed a force of expert riders, mounted them upon his own best horses and set forth to accomplish the task, riding at the head of his men on his own favorite mount. A corral into which the animals might be driven from the range was the first necessity. Taking advantage of a horseshoe bend in the Pend d'Oreille River, the outside bank of which is of clay and stands almost straight up and down, he had a fence constructed across the neck of the horseshoe and wing fences built for a distance of a mile or more from the end of this fence and a cut in the bank of the river out into the range. Into this the buffalos were driven in three separate bands at different times. It required much hard and dangerous riding on the part of the buffalo punchers, and many of the animals escaped numerous times, but perseverance prevailed and two years ago 400 of the herd were successfully rounded up, then driven down the Mission Valley into the corrals at Ravalli. From these corrals the animals were pulled and dragged by means of block and tackle into the railroad cars. Last year another roundup was made, but just when the riders were about to drive the herd to Ravalli the band stampeded and made its escape from the corral at Ronan.

This spring it was decided to make no further attempt to drive the animals from Ronan to Ravalli, but to corral them, load them in crates mounted upon wheels, and haul them over the mountains to the loading corrals.

For this purpose heavy crates, large enough to hold two buffalo each, were constructed of heavy timber, fastened together with steel and wire. Through a loading chute the animals were driven into these crates, securely roped in and hauled by means of six and eight-horse teams over the long and dusty journey to Ravalli. Here they were turned out into a series of corrals, from which they were driven, one at a time, into the loading chute. A noose around each buffalo's neck and the tugging of a score of men landed the animal in his car, where the struggling beast was held until a partition to separate him from his companions could be firmly put into place.

The dangers attending the work of handling the buffalo were many, and there were numerous escapes from death and injury on the part of riders and loaders. Fred Decker had his horse gored under him, and his brother, Johnnie Decker, twice had his mount gored and was slightly injured, his life being saved only by the prompt action of Pablo and his brother in firing pistol bullets into the neck of an infuriated beast that was trying to kill man and horse.

In their maddened struggles against being dragged into captivity 20 of the animals were killed, some of them rushing blindly against the sides of the corrals with such force as to break their necks. One, the patriarch of the herd, fought with a younger bull, then laid down in the loading chute and died.

It was a pathetic picture to one who stopped to think, as he gazed at the lacerated, bleeding, ragged animals that stood in the corral at Ravalli, gazing longingly through the cracks of the high, strong fences, cut upon the hills, beyond which lay the wild free range from which they had been dragged in ignominious captivity, to be loaded into cramped stalls of railroad cars, there to be left to vent their fury in vain kicks against the walls of their prisons until steam and steel landed them at their new home. Slowness in hauling the bison from the round-up corral necessitated some of the animals standing in the cars for eight days before the last train started for Canada. At last all of the shipments save those that were killed and two that escaped, were loaded aboard and the long trip of 1,200 miles to the point of unloading was commenced. Canada has secured a bargain in buffalo, and the United States loses an asset which it may never be able to replace.

A PECULIAR VINE.

IT is said that a rancher living near Medford, Oregon, has produced a deep-rooted vine which bears three crops of strawberries each year. It is claimed that the result has been obtained by grafting alfalfa roots to the roots of the strawberry vine. The vine and the result obtained is one of the most peculiar gardening stunts ever heard of.